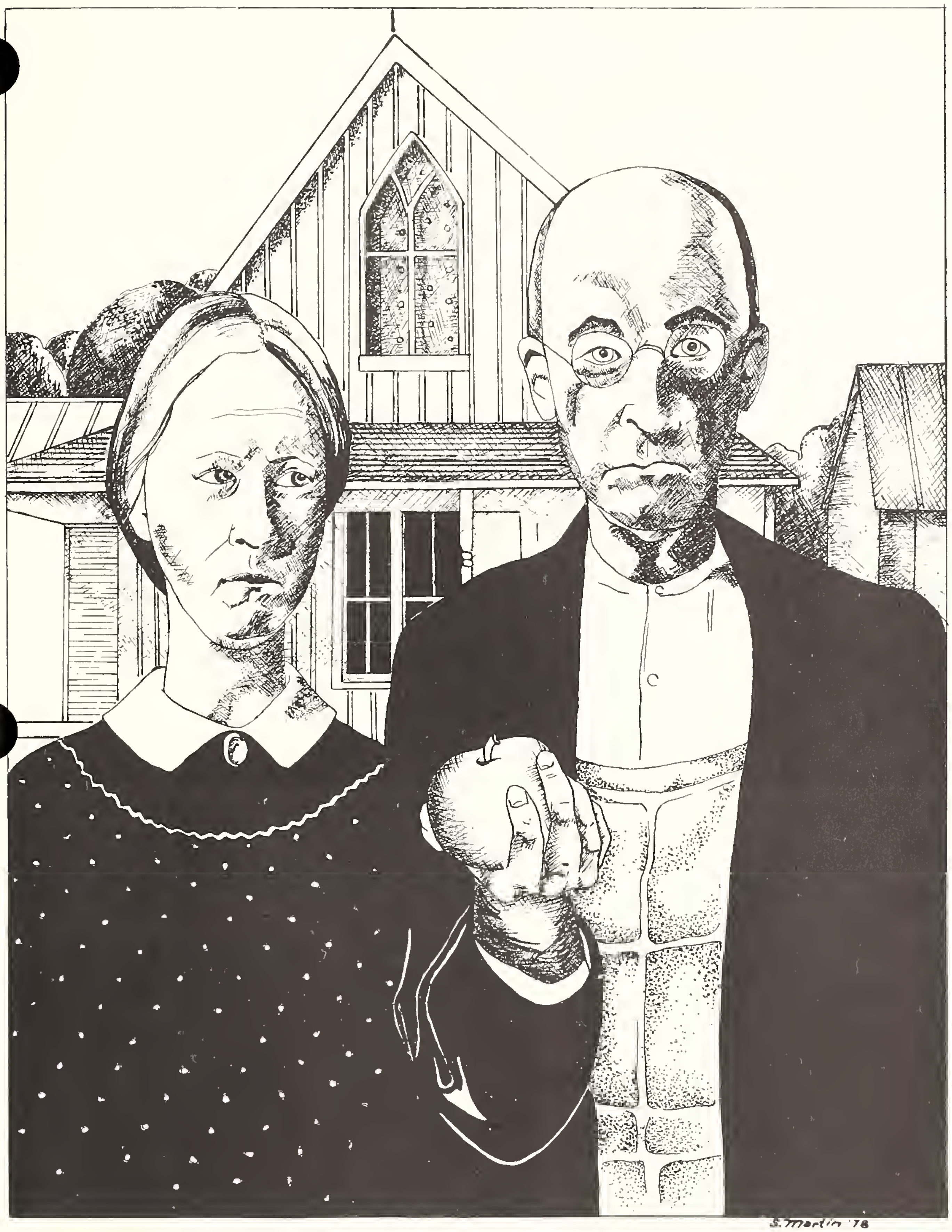
COMPUTERNEWS



University of Toronto

January 79 ISSN 0315-4661 No. 166

COMPUTERNEWS is a monthly publication produced by the University of Toronto Computer Centre. Enquiries or contributions should be directed to the Editor, Janet Barr or the Assistant Editor, Cathy Gillevet in the Engineering Annex, room 206 or (416)-978-2066. Layout and ATS typing are provided by Kathryn Bourne. Subscription changes should be directed to the Information Office, Engineering Annex, room 206 or (416)-978-4990.

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416/978-2066

Janet Barr, Editor

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HELLO 165 - GOODBYE 65

Over the weekend of January 20-21, personnel from Bell Canada Ltd., IBM Canada Ltd., and UTCC completed a project to transfer APL and ATS services from the S/360-65 system to the S/370-165-II system. The key components of this conversion involved the relocation of some equipment in the machine room plus the conversion of APL files and workspaces from 2314 disks to model 3330-11 disks. Prior to the weekend, a new operating system, OS/MVT/21.8, had been installed and tested on the 165 by UTCC. Following this event, test versions of APL and ATS were run on the 165 to verify the functionality of these systems.

The transfer was carried out in a manner quite similar to the 165 cutover. At 1800 hours, services to APL and ATS users were terminated in order that the telecommunications facilities could be disconnected. These facilities were moved to a new location in the machine room and temporarily reconnected to the S/360-65. Following this, UTCC personnel completed several operational procedures including month-end accounting plus a full set of backups. As backup tapes were completed, they were restored onto the 165 disks. Additional equipment moves and cabling changes were carried out to finalize the complete configuration of the 165. Full tests were run to verify all aspects associated with APL and ATS. New rates were installed and validated, and all files were again backed up.

During these activities, no major problems were encountered. In fact, UTCC was able to offer full user service on Sunday, January 28, one day earlier than originally planned.

This conversion brings to an end all services on the S/360-65 - the last 360 generation CPU at the University of Toronto. The 65 was installed at UTCC in 1968 as part of a dual 65 system in the Sandford Fleming Building. When the 165 was installed, it was moved to the McLennan Laboratories where it was dedicated to running APL, ATS and, until 1974, CPS. It has remained in the McLennan location ever since. During this time, the load has grown at least five times, a fact which has resulted in the saturation of the system for substantial periods during the academic term. Throughout the last ten years, the 65 service has proved to be highly reliable even when construction activities in the immediate vicinity of the 65 resulted in a less than ideal environment.

In closing, we say good-bye to the 65 which is being dismantled and sold along with several of the peripheral units which were attached to it. We would like to thank the IBM personnel who maintained the S/360-65 and the UTCC personnel who were responsible for its operation.

Derry Cox

SHARP APL ON THE IBM S/370-165-II

During the January 20-21 weekend, APL services were transferred from the S/360-65 to the S/370-165-II (refer to the article entitled HELLO 165 - GOODBYE 65 for a detailed description of this transfer).

The following list summarizes the benefits which APL users will enjoy as a result of the transfer.

1. APL workspace size has been increased to 176K bytes (more than a four-fold increase over the previous workspace size of 40K bytes). The larger APL workspace provides users with new opportunities for applications development. Additionally, the processing of larger records and data arrays incore with less looping and program overlay means reduced computing costs.

2. The superior CPU, channel and 3330-type disk support mean improved file subsystem response.

3. Terminal response times have significantly improved as a result of better I/O throughput rates and the 165's processing speed which is far faster than that of the S/360-65.

UTCC's analysis of APL performance on the S/360-65 and the S/370-165-II has shown that the improvement in APL processing time on the S/370-165-II ranges between a factor of 4.2 and 5.4 in the interpreter functions and a factor of between 2 and 3 in the major SHARP APL File Subsystem functions. UTCC further observed that file processing times could be significantly reduced, byte for byte, by increasing the size of the file record. For example, by increasing the average file record size from 1024 bytes to 4096 bytes, the CPU time required to read a certain amount of data was reduced by more than 50%. The four-fold increase in the APL workspace size provides APL users with larger file record sizes and further reduces the cost of SHARP APL file processing.

The rate schedule for the improved APL service is as follows. The cost per connect hour remains unchanged at $3.75/hour. The cost per CPU minute has been increased to $21.60/CPU minute. The increase in the CPU charge is offset by the fact that the 165's processing speed is on the average four times faster than that of the S/360-65.

To conclude, in addition to providing larger APL workspaces, and improved file subsystem and terminal response times, the new APL service will provide UTCC's APL users with more computing power per dollar.

Ernst Goetze
Rein Mikkor

UPGRADED SHARP APL PLANNED FOR MAY

The move of SHARP APL Services to the System/370-165-II is only the first step in what we plan to be a significantly improved APL Service at UTCC.

As many users are aware, the SHARP APL processor which we currently run was obtained from I.P.SHARP Associates in 1971-1972, with upgrades applied in 1974 and 1975 to bring it to the then current level. In addition, UTCC has developed a number of local modifications, most notably, the XFR data transfer facility to support data transfer between SHARP APL files and datasets or files on our other systems.

Since 1975, the commercially available SHARP APL processor developed by I.P.SHARP Associates in Toronto which supports a world-wide network of APL processing, has been enhanced and optimized several times, to the point that SHARP APL is one of the most advanced and reliable APL processors available today.

We expect that by early May of this year, UTCC will upgrade to a current version of SHARP APL on our S/370-165-II. Some of the major benefits of the new version of SHARP APL will be:

1. language compatibility with IBM APLSV and VS APL which will allow users to use popular documentation and programs developed for these processors.

2. an APL sub-tasking capability that will let the APL terminal user control more than one APL execution stream either concurrently with his terminal work, or as a batch APL task without a terminal connection.

3. further improved reliability, integrity and optimization of the APL interpreter and SHARP APL File Subsystem operations.

Most of the features of the new SHARP APL processor will already be familiar to our users from experience with IBM APLSV and our current SHARP APL system. I.P.Sharp's SHARP APL Reference Card, available from the UTCC Information Office, is an excellent and concise guide to all SHARP APL features. In addition, the volume of SHARP APL TECHNICAL NOTES (currently, #0-29) maintained by the UTCC Technical Reference Library, provides a good in-depth discussion of the new features, as well as much good advice on current APL programming practise.

Ernst Goetze and Rein Mikkor

NEW CLASS E SERVICE

The purpose of this article is to introduce the new Class E computing service which will soon be available on the IBM S/370-165-II computer. This service is designed to provide very low cost execution only computing to users with jobs requiring large amounts of CPU.

The following describes some of the specifications and restrictions related to the new Class E service. A Class E job may request up to 4 hours of equivalent run time (= CPU + I/O wait time). Each Class E job will receive a region size of 500K. Up to two tape mounts (6250/1600 bpi) and one disk mount (3330) per job will be permitted. Scratch disk space will be available for temporary datasets. Gould plotting on Class E will be supported.

In an effort to minimize computing costs, language compilers and run time libraries will not be available on Class E. However, the linkage-editor, most IBM utility programs, and some UTCC utility programs will be available. Additionally, no 800 bpi tape mounts or 2314 disk mounts will be possible.

As previously mentioned, Class E jobs are executed on the IBM S/370-165-II. The 165 computer will be connected via a communications link to the 3033 computer. Class E jobs will be submitted through the standard facilities on the 3033 computer (card readers, TSO, WYLBUR, DEC 1090 link) and with CLASS=E coded on the JOB statements. After validating the accounting information, the 3033 computer will transfer the job across the link to the 165 computer for processing. Class E jobs will be processed on a first-in, first-out basis. Printing, punched card, and Gould plotting output is transferred back to the 3033 for handling in the usual fashion.

Disk dataset storage for Class E will be provided by a special disk pack known as the "shared" disk pack. This disk pack is connected to both the 3033 and the 165 and datasets on this disk pack can be accessed by jobs running on either of these computers. Programs and data from the 3033 can be stored on the shared disk for later execution under Class E on the 165. Class E jobs can store results in datasets on the shared disk which can later be accessed by Class A, B, and C jobs on the 3033. Because the shared disk represents a limited resource and to discourage the creation of datasets on the shared disk which would not be needed for use on Class E, the shared disk dataset storage charging rate will be 1.3 times the rate for standard user disk dataset storage.

Due to the absence of compilers on Class E, most Class E jobs will execute programs in load module form. A source program will first be compiled and link-edited on the 3033 under Class A, B, or C and the resulting load module stored on a dataset on the shared disk. The subsequent submission of a Class E job will cause the load module to be fetched from the shared disk dataset and executed on the 165 computer.

cont'd...

NEW CLASS E SERVICE cont'd

The proposed rate structure for Class E is as follows. The equivalent run time will be charged for at the rate of $0.50 per minute. Class E jobs will be subject to a minimum equivalent run time charge. That is, if the quantity (equivalent run time) times $0.50 is less than the set minimum charge, the actual equivalent run time charge incurred will be equal to this minimum charge. The exact figure for this minimum charge has not yet been finalized. The purpose of this minimum charge is to ensure that the jobs run under Class E are those which make efficient use of the resources available and require minimal operator intervention; namely, jobs which use considerable CPU time. Tailoring the Class E service for this type of job has enabled UTCC to provide the very low rates described above. There will be no charge for core used. Tape and disk mounts will cost $1.10 and $3.25, respectively. Unit record services will be charged for at standard, priority 4 rates.

To conclude, Class E will provide extremely inexpensive, execution only computing. It will offer considerable savings to many users who are currently running large programs under Class C. A USERBOOK module describing the new Class E service in detail is currently being written and will soon be available. The actual Class E service is expected to be available for general use by approximately April 1. Users with questions regarding this new service are invited to contact Bob Chambers (978-8823) or Herb Kugel (978-7286).

Bob Chambers

NON-CREDIT SHORT COURSES

Beginning in February, several short courses will be offered by the Computer Centre. Those interested in enrolling in one of UTCC's short courses should note that although there will be no registration fee, the user will be required to hold a valid UTCC Customer Account Number (CAN).

The following is a brief description of the courses which will be offered. Note that in order to participate in class demonstrations, a Systems Access Code (SAC) will be required; an S/370 SAC will be required for the courses numbered 1, 2, 4 and 5, and a DEC 10 PPN (SAC) will be required for the courses numbered 3, 6, and 7.

cont'd...

NON-CREDIT SHORT COURSES cont'd

Users interested in registering for Courses 1, 2, 4 or 5 are asked to contact the Information Office, Room 206, 11 King's College Road (Engineering Annex), 978-4990. Users interested in registering for Course 6 or Course 7 are directed to Ms. Bernie Ogino, 978-4548.

1. INTRODUCTION TO COMPUTING

Prerequisites: Although there are no prerequisites for this course, persons with some experience using prepackaged programs such as SPSS may find the kind of information offered at this level beneficial.

Dates: February 19, 20, 21, 22, 23

Time: 3:00 - 4:00 p.m.

This course is aimed at the non-programmer. While it is unlikely that you can become a programmer in five one-hour sessions, you should come away from the course with an idea of what computers are, what they can and cannot do, and how to use the systems available at UTCC for solving simple problems.

2. INTRODUCTION TO STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES (SPSS)

Prerequisites: Background in social science statistics plus Course #1 or equivalent.

Dates: February 26, 27, 28, March 1 and 2.

Time: 2:00 - 3:00 p.m.

This course is aimed at Social Science users who plan to use the computer to process their data. SPSS is an applications oriented programming language which contains powerful routines for the analysis of data while allowing users to manipulate their data with simple FORTRAN-like statements. The course will be an introduction to SPSS for users who are not familiar with the package. It would not be suitable for those who already have a working knowledge of SPSS.

cont'd...

NON-CREDIT SHORT COURSES cont'd

3. INTRODUCTION TO SPSS CONVERSATIONAL STATISTICAL SYSTEM (SCSS) ON THE DEC 10

Prerequisites: Experience with Batch SPSS.

Dates: March 19, 20, 21, 22, 23

Time: 4:00 - 5:00 p.m.

SCSS is a truly interactive system giving immediate results to problems such as correlation, regression, etc., working with either previously saved SPSS files or newly created ones.

4. 'WYLBUR' FOR PROGRAMMERS USING CARDS

Prerequisites: Experience running Batch jobs on the S/370 including the use of simple JCL and at least one source language compiler or applciation package.

Dates: March 6, 7 and 8

Time: 3:00 - 4:00 p.m.

WYLBUR is a system designed to allow the user to do work on the computer from a typewriter-like terminal connected to the system by telephone lines. The two major applications of WYLBUR are computer programming and text processing. Programmers at typewriter terminals can use WYLBUR to type programs, store them on disk, submit them for Batch processing and examine parts of the output prior to printing on the highspeed printer. WYLBUR can relieve the programmer of many of the problems and delays usually associated with card input.

5. INTRODUCTION TO 'WYLBUR' FOR PROGRAMMERS USING TSO

Prerequisites: Same as Course #3 and experience running Batch jobs through TSO or a similar RJE system.

Dates: March 13, 14 and 15

Time: 3:00 - 4:00 p.m.

WYLBUR offers good editing capabilities, edit recovery and fast response to editing and remote job entry/output commands. WYLBUR does not offer any interactive programming in FORTRAN, PL/I, etc. but does have an EXEC language analogous to TSO's CLIST facility. This can be used to write simple interactive programs, as well as to prepare JCL under program control.

cont'd...

NON-CREDIT SHORT COURSES cont'd

6. COMPUTERIZED TEXT PROCESSING ON THE DEC 10

Prerequisites: None

Dates: February 12, 13, 14, 15, 16

Time: 10:00 - 12:00 a.m.

Computerized text processing was developed in order to reduce the number of steps involved in retyping, reproofing, and formatting documents, thus reducing document preparation time. Anyone who has used a conventional typewriter to prepare a document has experienced the frustration of retyping an entire page or pages of material in order to accommodate a few minor corrections or additions. Text processing eliminates much of this retyping. In addition, with text processing, copies of the same document can be produced with different margins, spacing and formatting, again without retyping. Text processing makes it possible to input, manipulate and communicate text electronically.

The text processing system in use at UTCC consists of the SOS text editor and the RUNOFF text formatter which run on the DEC system-10 computer. The purpose of this course is to introduce and explain the basic capabilities and use of UTCC's text processing system. It should be noted that this course is primarily intended for persons whose duties include typing manuals, proposals, contracts, reports, letters, memos, etc.

7. TEXT PROCESSING ON THE DEC 10

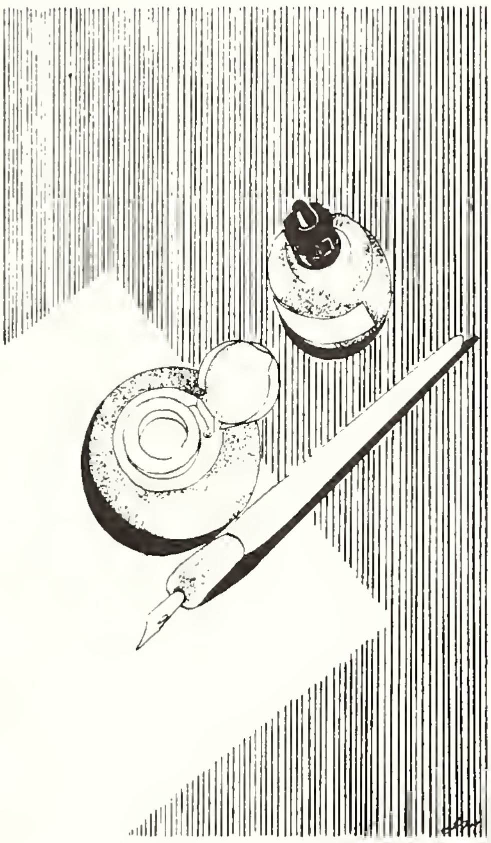
Prerequisites: None

Dates: February 20, 21, 22

Time: 10:00 - 12:00 a.m.

The structure of this course is basically identical to that of Course #6. The primary difference between the two courses is that Course #6 is intended for persons performing secretarial type duties and Course #7 is intended for persons interested in using UTCC's text processing system in the preparation of such documents as thesis papers, manuscripts, etc.

HAVE YOU HEARD THE WORD



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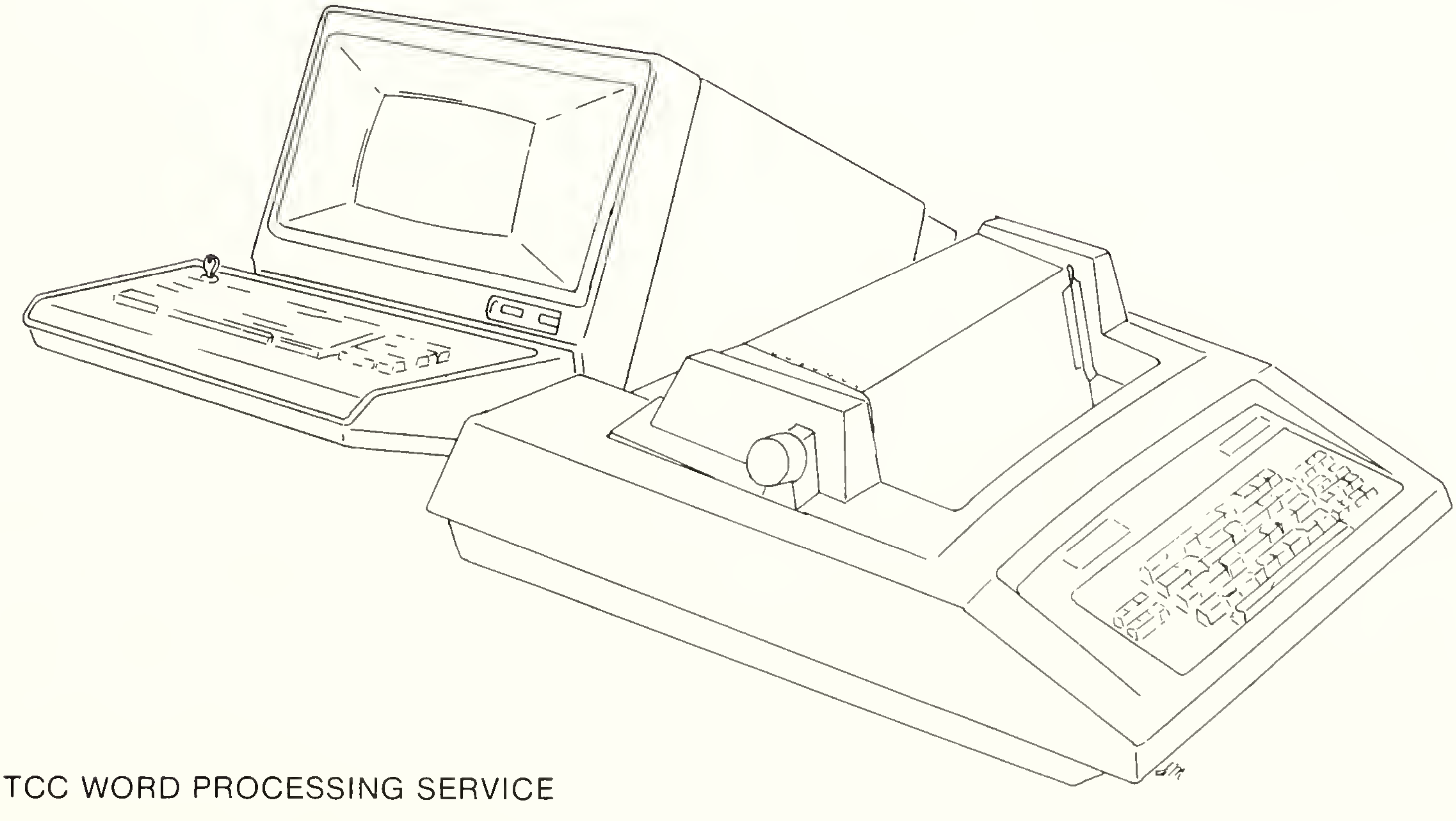
- your document can be stored and will always be available for your continued use
- on campus convenience
- lower production cost

For information call
Bernice Ogino
978-4548



NEW MVS SORT AVAILABLE

With the installation of the MVS Operating System, several new software products are now available at UTCC. One of these products is the IBM MVS SORT program. In addition to providing new and improved sorting techniques, this product allows users to take maximum advantage of UTCC's new double density disk drives.

Users of SORT programs other than MVS SORT should note that as long as the standard UTCC catalogued procedures are used, jobs will not be affected by the installation of the MVS SORT program. However, users of other SORT programs who are using their own catalogued procedures may encounter problems as a result of the change to the MVS SORT program. These users are directed to Herb Kugel (978-7286) or Kin Fong (978-4924) for further information.

Users of SORT programs should also note that UTCC intends to alter the SORTMNT1 and SORTMNT2 catalogued procedures in an effort to provide greater SORT workspace at no additional cost. Further details concerning this matter will be made available in next month's issue of COMPUTERNEWS.

Herb Kugel

NEW DISK DRIVES FOR THE DEC 1090

It was recently announced that additional disk storage for the DEC 10 will soon be available. This will please a number of users who have noticed that only 10 to 20% of the available storage remains unassigned.

At present, our disk equipment for the DEC 10 consists of four RP04 drives, each with a capacity of about 160,000 blocks (100 Mbyte). The public structure known as DSKB consists of three packs with a total capacity of about 480,000 blocks. The remaining drive is usually mounted with DSKC, a structure mainly used by system software staff. DSKC is the structure which is removed from the system in cases where only three drives are operational.

The increase in disk capacity will take place in two phases. Within the next few weeks, one additional drive will be added to the system. The new drive will increase the size of DSKB by one third, thus resolving any immediate space problems.

The second phase will occur six to eight weeks later when the entire disk system will be converted to four RP06 drives, each with a capacity of about 310,000 blocks (200 Mbyte). The consequent doubling of total disk storage should allow for extended growth for some time to come.

Additionally, a second RH20 disk channel/controller will be added. At present, a single channel is used for both disk I/O and swapping. The contention which results when the system is heavily loaded produces a rather large amount of "lost time" ("Lost time" refers to the period during which the system is unable to run any of the jobs in main memory, but must wait for one to be swapped in). Using two channels should significantly improve overall system performance.

cont'd...

NEW DISK DRIVES cont'd

The regular LOGIN notice will keep users informed of any new developments concerning these upgrades.

Ed West

MATH PACKAGES ON THE DEC 1090

Several programs of a mathematical nature are available on the DEC. Users who are programming in the BASIC language should note that a number of subprograms are available in BASLIB. Information concerning these routines can be obtained by typing HELP BASLIB.

Several mathematical packages written in FORTRAN have recently been added to the system. Most of these packages have been acquired from the DECUS Library. General information on both stand-alone packages and callable subroutines can be obtained by entering HELP MATHPK. Several other FORTRAN routines are in the developmental stage and should be available in the near future.

A few users have requested assistance in transferring IMSL routines from the IBM 3033 Processor to the DEC 1090 system. These users should note that UTCC leases the IMSL Library for use on the 3033 system only. As such, copying this software to the DEC 1090 is considered an illegal and prosecutable act.

Users with questions or suggestions regarding mathematical packages on the DEC 1090, are asked to contact Bob Chambers, Room 1202, Burton Tower, phone 978-8823.

Bob Chambers

A REPORT FROM NMCS

The Numerical Methods Consulting Service (NMCS) has assisted several users with initial value problems for ordinary differential equations (ODES). Many of these users were unaware that much of the numerical analysis research work done by the Department of Computer Science at the University of Toronto involves the evaluation and design of computer software for applications in that area. As a result, many of these users were using inefficient, unstable and inadequate software for their problems. Usually, these users were able to resolve their problems when NMCS supplied them with the correct computer programs. The following describes three cases which may be of interest to the computing community.

In the first case, a user was solving a complicated 2 point boundary value problem using the shooting method. The user had already spent a considerable amount of her computing funds before she approached NMCS for assistance. NMCS recommended that she substitute the RKF6 (Runge-Kutta-Fehlberg of order 6 and 7) subroutine for the inefficient SSP subroutine DRKGS which she had been using. The recommended procedure resulted in more accurate results and a decrease in cost by a factor of 3 to 4.

cont'd...

A REPORT FROM NMCS cont'd

Another user came to NMCS after solving an initial value problem using Numerov's method (also called the Royal Rule). The user was not aware that under certain conditions it may be unstable. After studying his results, NMCS suspected the instability and suggested the use of RKF6 which gave a stable solution at reduced expense.

Another researcher encountered problems when attempting to solve some ordinary differential equations. This researcher found that after a few steps, the integrator took such small steps that it could not reach the end of the interval in a reasonable time. After investigating, NMCS realized that the ordinary differential equation was 'stiff' and that the 'non-stiff' integrator which the researcher had been using was inappropriate. Using the correct software, the user was able to solve his problem accurately and in a reasonable time interval.

If you have complex mathematical problems in the area of numerical methods contact the Numerical Methods Consulting Service. They are here to help you.

Imre Farkas

ERRATUM

Newsletter subscribers should note the following correction to the article entitled DUAL DENSITY DISK DRIVES INSTALLED which appeared in the December issue of COMPUTERNEWS.

The maximum track capacity, however, is the same, 13030 bytes, and this change is logically transparent to the user if he continues to use the standard UTCC catalog procedures and naming conventions. However if users are using IEHMOVE they should specify UNIT=3330-1 in the JCL and in the IEHMOVE Control Statements. If you have any questions, please call Herb Kugel, at 978-7286.

We apologize for any inconvenience this error may have caused. We regret any embarrassment this may have caused the author.

Janet Barr

NATIONAL EDUCATIONAL COMPUTING CONFERENCE

From June 25 to June 27, 1979, the University of Iowa will be hosting the National Educational Computing Conference (NECC). As its name implies, NECC is a national computer conference designed to provide an opportunity for the interprofessional exchange of ideas about educational computing. As such, the end product of the conference should be better education in the classroom.

Further information concerning the conference can be obtained by writing:

The University of Iowa
Publications Office
Weeg Computing Center
Iowa City, Iowa 52242

PERSONNEL CHANGES

Vicki Little has recently joined the organization as our Budget and Personnel Supervisor. She comes to us from Private Funding where she worked as an Administrative Assistant for two years.

Larry van Pelt began working at UTCC on January 1, as Supervisor, Internal Systems. Larry comes to us from the Office of Academic Statistics where he worked for several years as a systems analyst.

Barbara Pinette and Jim Bailey will be working as computer operators at the Engineering Annex Terminal. Barbara is also a part-time student of Civil Engineering at U of T. Jim who comes to us from Amalygas Ltd., is a graduate of a three-year course in Electronics Technology.

We would like to extend a warm welcome to the new members of UTCC's staff.

Clara Pereira

RECENT ACQUISITIONS IN THE DEPARTMENT OF COMPUTER SCIENCE LIBRARY

Annual review of information science and technology. v.13 (1978).

Association for Computing Machinery
ACM guide to computing literature 1977.

Bell, C. Gordon, Mudge, J.C. and McNamara, J.E.
Computer engineering: a DEC view of hardware systems design.
Bedford, Mass., Digital Press, 1978.

Canadian Information Processing Society.
Canadian salary survey 1978.

Compcon, 15th, Washington, D.C., 1977.
Distributed processing: micros, minis, and maxis, by B.H. Liebowitz and J.H. Carson.
Long Beach, Cal., IEEE, 1977.

Klinger, A. et al, eds.
Data structures, computer graphics, and pattern recognition.
New York, Academic Press, 1977.

Martin, James.
Future developments in telecommunications. 2d ed.
Englewood Cliffs, N.J., Prentice-Hall, 1977.

UTCC SYSTEMS

3033 PROCESSOR

- located in McLennan Physical Laboratories
- provides General Purpose Job Stream, High Speed Job Stream, TSO, WYLBUR
- 6 megabytes of memory
- MVS with JES2

SYSTEM/360 MODEL 65

- located in McLennan Physical Laboratories
- provides APL and ATS services
- 1536K bytes of core
- OS/MVT with APL and ATS

DECSYSTEM 1090

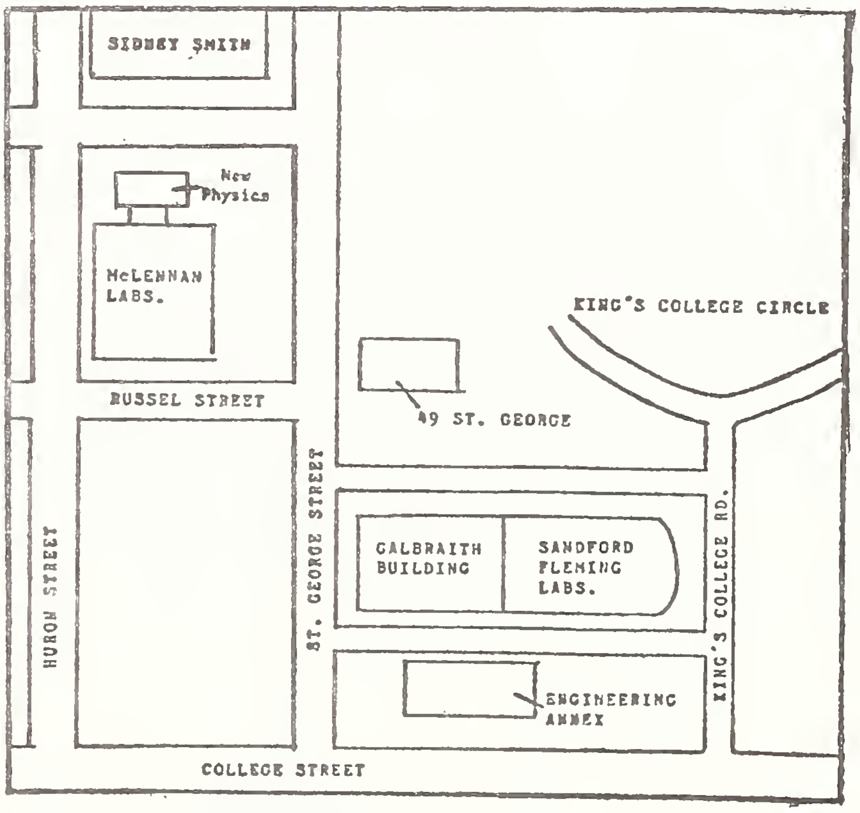
- provides General Purpose Time-Sharing
- 256k - 36 bit words of memory
- TOPS10 operating system

COMMUNICATIONS & SMALL SYSTEMS

- located in SF207/SF109/112
- DEC GT44 System with PDP-11/40 CPU
- DEC GT40 System with PDP-11/05 CPU
- provides specialized graphics and interactive graphics
- provides on-line and real-time computing services, data acquisition and minicomputer services

SYSTEM/370 MODEL 165-II

- currently unavailable



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POSITION	ROOM	CENTREX PHONE NUMBER
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ASSOCIATE DIRECTOR		
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Eugene Siciunas	NP350	4967
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Derry Cox	NP350	7092
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Sylvia May	EA206	7148
ACCESS CODES		
Janet Howarth	EA206	8703
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Don Gibson	EA201	5568
SUPERVISOR, PROGRAMMING SERVICES		
Helen Peacock	SG201	6877
SUPERVISOR, APPLICATIONS		
Herb Kugel	SG304	7286

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Ralph Lombardi	SG305	7130

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TS Advisors	SG204	6465
Mark Tapia	SG204	7109
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Scarborough		
Ihor Prociuk		284-3173
Arts and Science		
Sue Chong	SS2133	6509
New Physics		
Bob Chambers	NP1203B	8823

SUPERVISORS, OPERATIONS

Paul Scarborough(S/370-3033)	NP335	6220
Kam Jain (S/360-65 & DEC 1090)	NP335	7374
Dave Wong (S/370-158)		6864

KEY:

EA = Engineering Annex
SG = 49 St. George
NP = McLennan Physical (New Physics)
SF = Sandford Fleming
SS = Sydney Smith

JOB AND SYSTEM STATUS QUERIES

SYSTEM/3330,TSO	7373
ATS/APL	6234
2741 TERMINAL MALFUNCTIONS	7107

TIME-SHARING SERVICES	DIAL-UP
APL,ATS	7200 CENTREX 7201 NON CENTREX
TSO,WYLBUR	6200 CENTREX 6201 NON CENTREX
DEC	4224 CENTREX 4244 NON CENTREX
PHONE-IN ADVISING	6465

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